FIG.1

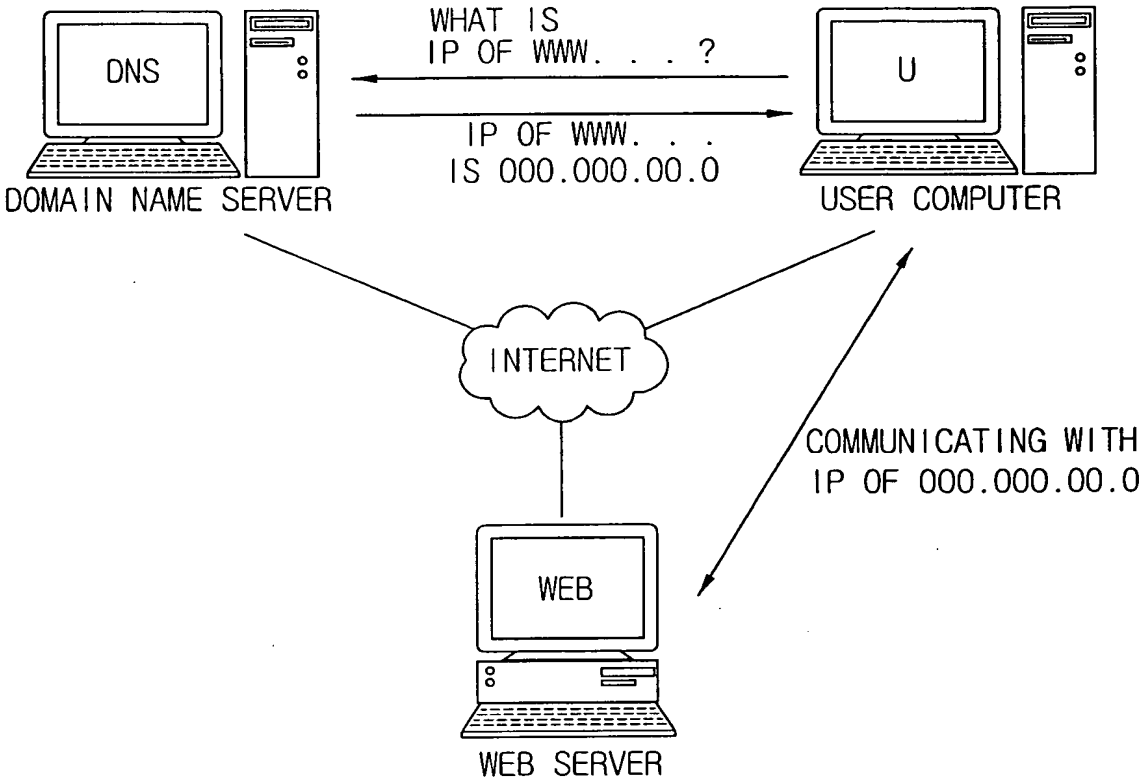

DNS
WHAT IS
IP OF WWW. . . ?
IP OF WWW. . .
IS 000.000.00.0
U
DOMAIN NAME SERVER
USER COMPUTER
INTERNET
COMMUNICATING WITH
IP OF 000.000.00.0
WEB
WEB SERVER

FIG.2

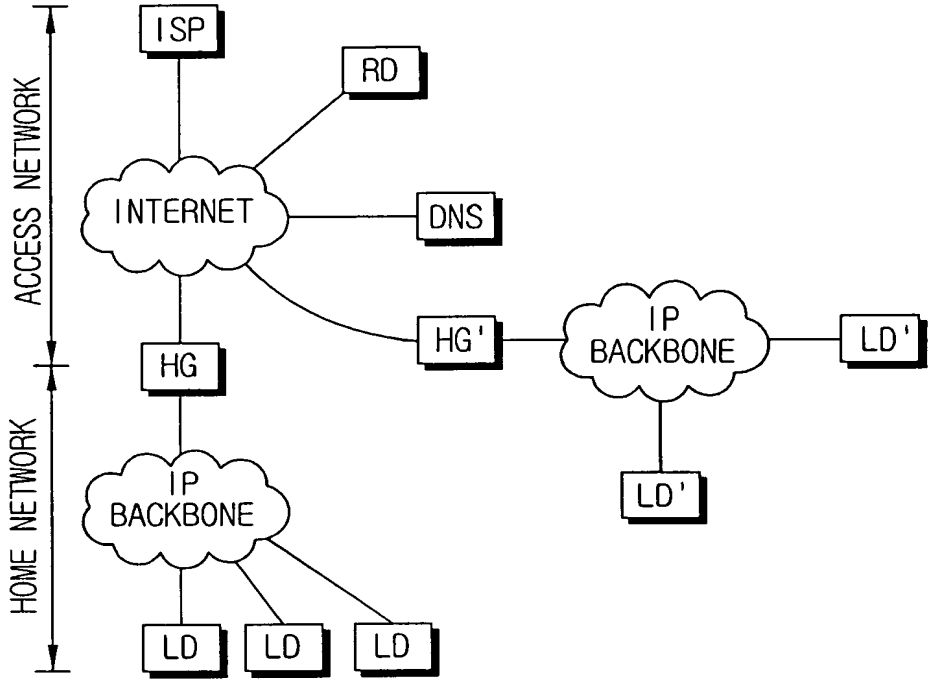

ISP
RD
INTERNET
DNS
HG'
IP BACKBONE
LD'
HG
IP BACKBONE
LD'
LD
LD
LD
ACCESS NETWORK
HOME NETWORK

FIG.3

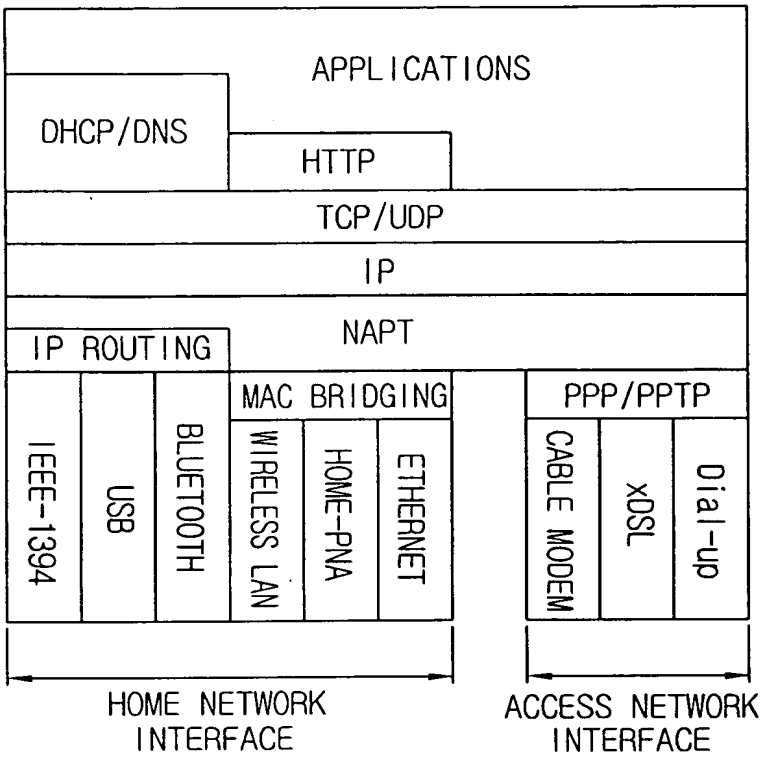

APPLICATIONS
DHCP/DNS
HTTP
TCP/UDP
IP
NAPT
IP ROUTING
MAC BRIDGING
PPP/PPTP
IEEE-1394
USB
BLUETOOTH
WIRELESS LAN
HOME-PNA
ETHERNET
CABLE MODEM
xDSL
Dial-up
HOME NETWORK INTERFACE
ACCESS NETWORK INTERFACE

FIG.4

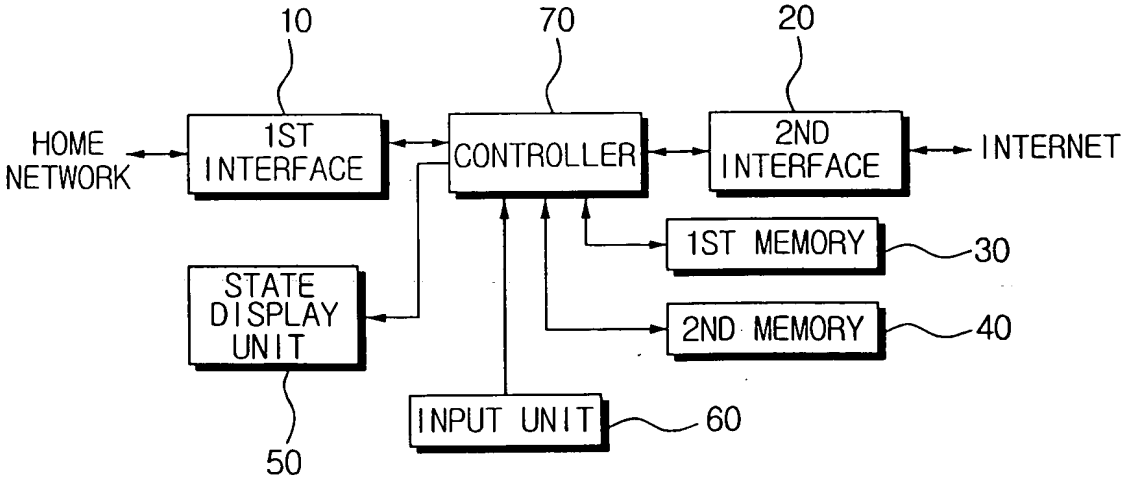

10
70
20
HOME NETWORK
1ST INTERFACE
CONTROLLER
2ND INTERFACE
INTERNET
1ST MEMORY
30
STATE DISPLAY UNIT
2ND MEMORY
40
INPUT UNIT
60
50

FIG.5A

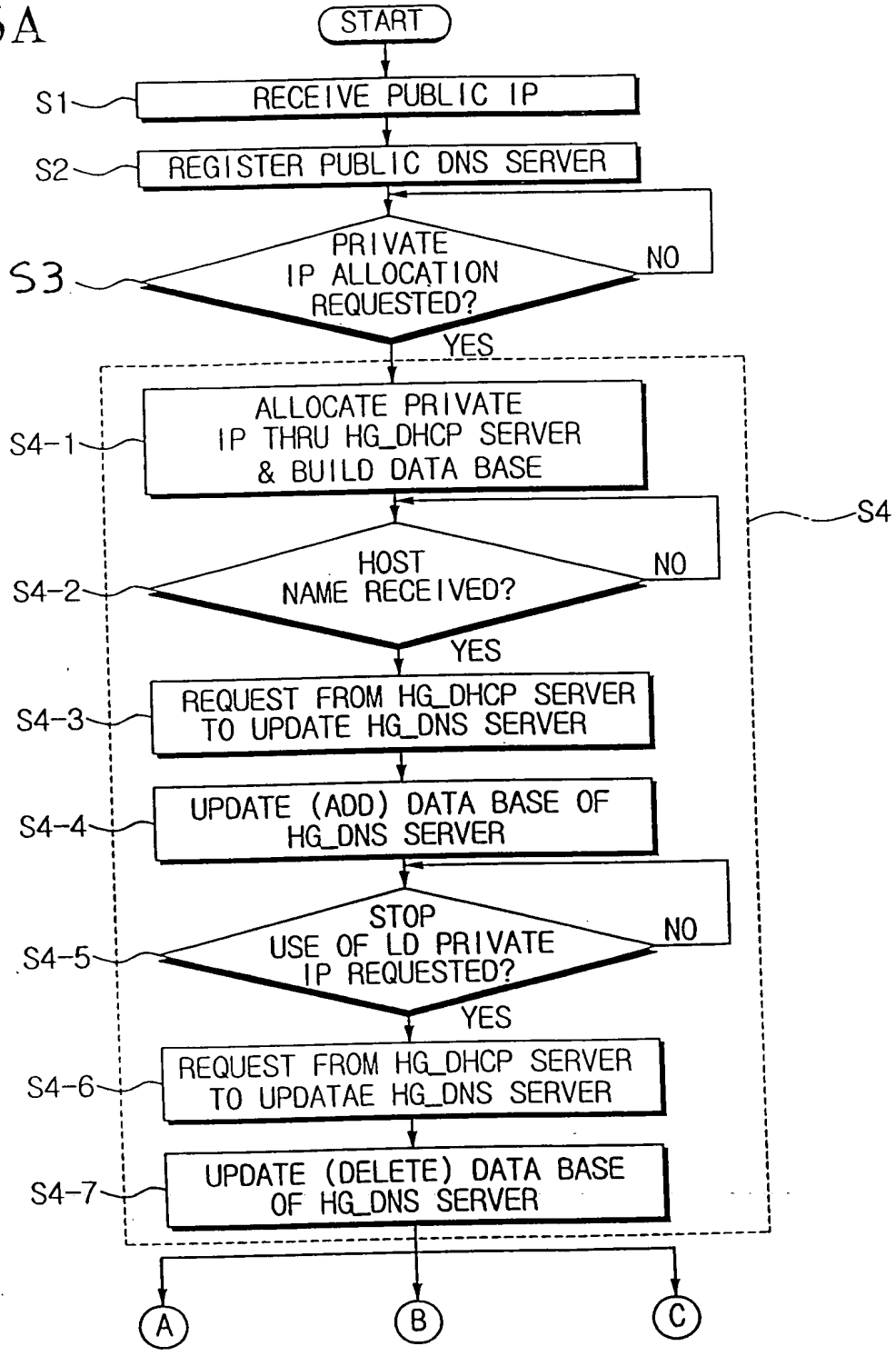

START
S1
RECEIVE PUBLIC IP
S2
REGISTER PUBLIC DNS SERVER
S3
PRIVATE IP ALLOCATION REQUESTED?
NO
YES
S4
S4-1
ALLOCATE PRIVATE IP THRU HG_DHCP SERVER & BUILD DATA BASE
S4-2
HOST NAME RECEIVED?
NO
YES
S4-3
REQUEST FROM HG_DHCP SERVER TO UPDATE HG_DNS SERVER
S4-4
UPDATE (ADD) DATA BASE OF HG_DNS SERVER
S4-5
STOP USE OF LD PRIVATE IP REQUESTED?
NO
YES
S4-6
REQUEST FROM HG_DHCP SERVER TO UPDATAE HG_DNS SERVER
S4-7
UPDATE (DELETE) DATA BASE OF HG_DNS SERVER
A
B
C

FIG.5B

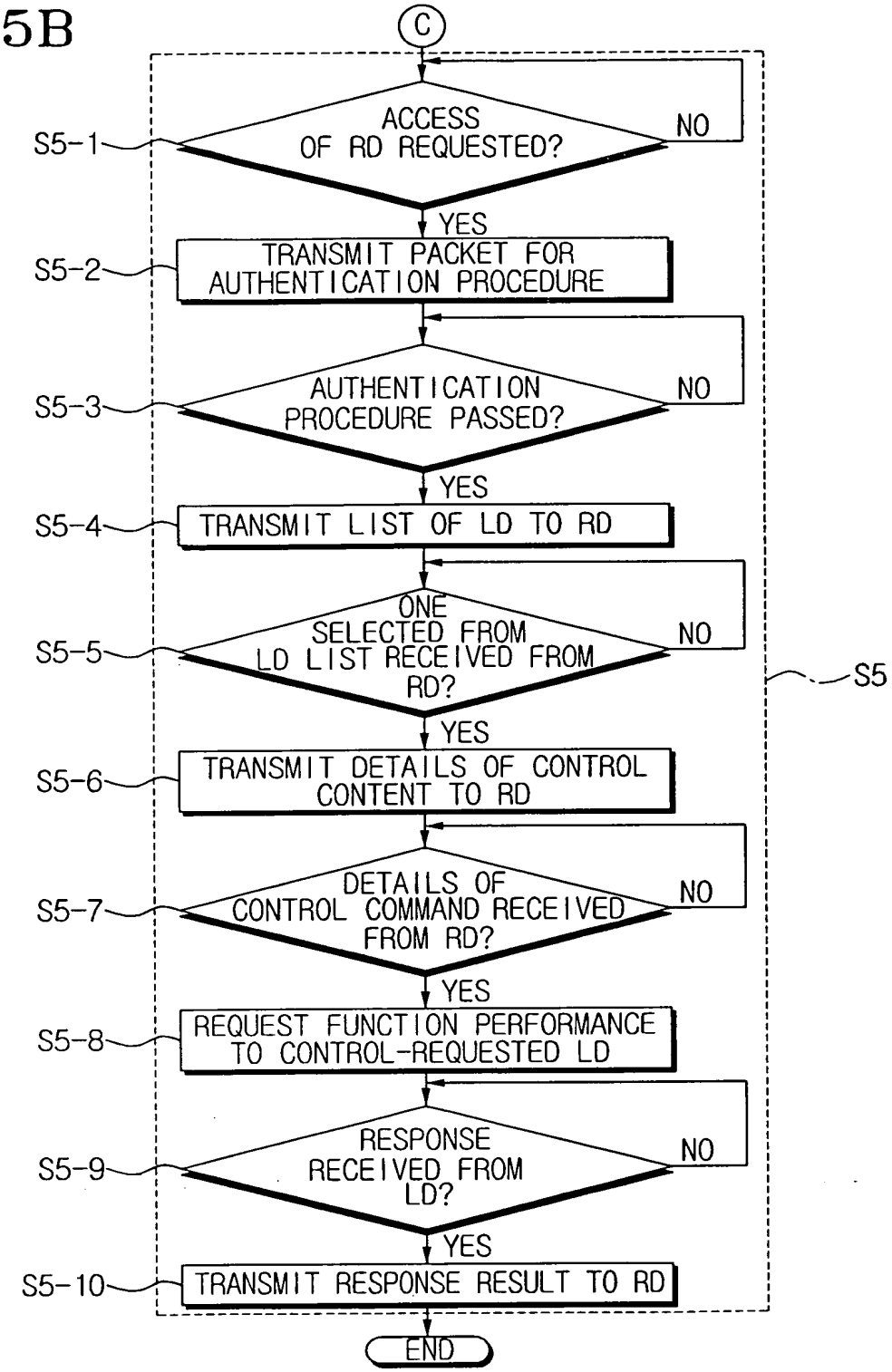

C
S5-1
ACCESS OF RD REQUESTED?
NO
YES
S5-2
TRANSMIT PACKET FOR AUTHENTICATION PROCEDURE
S5-3
AUTHENTICATION PROCEDURE PASSED?
NO
YES
S5-4
TRANSMIT LIST OF LD TO RD
S5-5
ONE SELECTED FROM LD LIST RECEIVED FROM RD?
NO
YES
S5-6
TRANSMIT DETAILS OF CONTROL CONTENT TO RD
S5-7
DETAILS OF CONTROL COMMAND RECEIVED FROM RD?
NO
YES
S5-8
REQUEST FUNCTION PERFORMANCE TO CONTROL-REQUESTED LD
S5-9
RESPONSE RECEIVED FROM LD?
NO
YES
S5-10
TRANSMIT RESPONSE RESULT TO RD
END
S5

FIG.5C

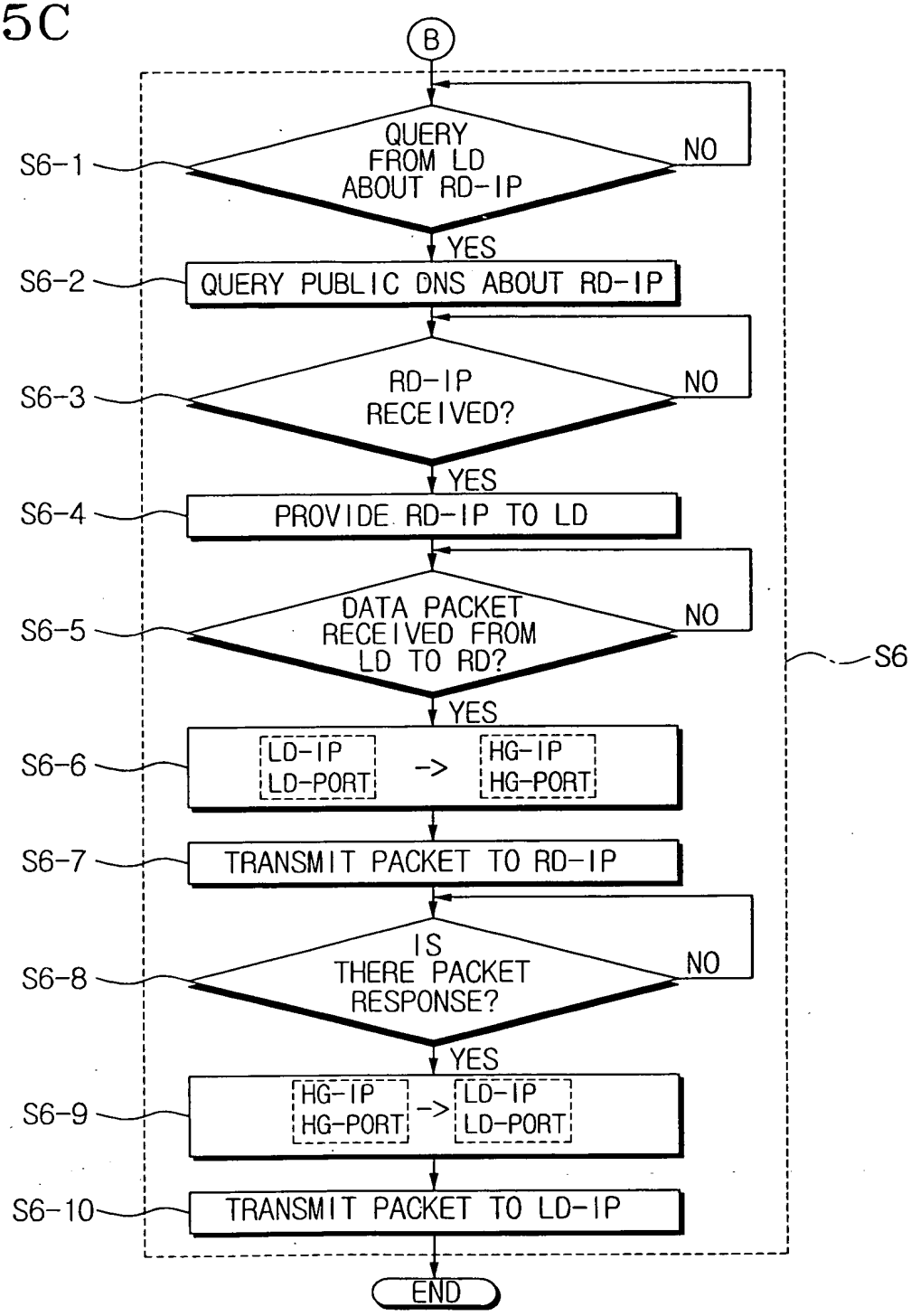
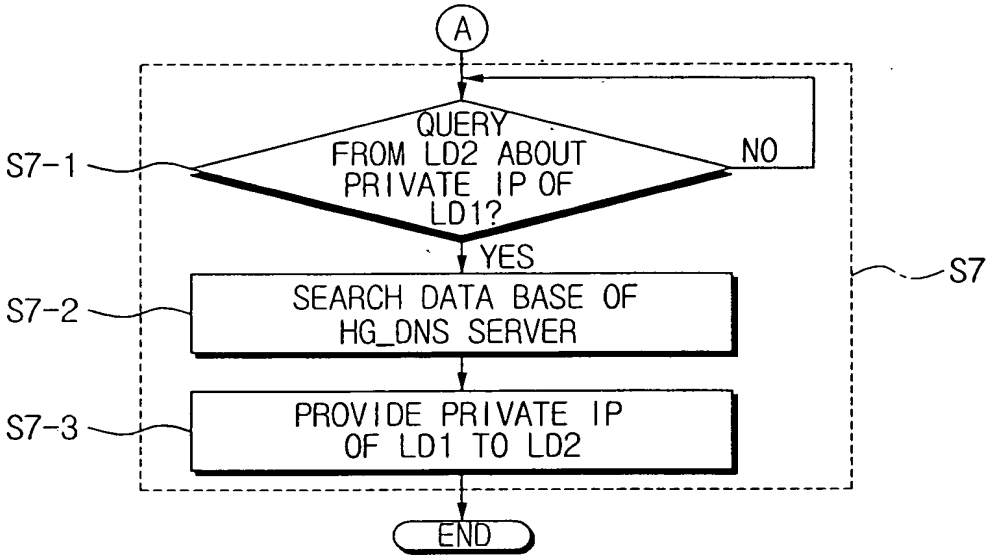

B
S6-1
QUERY FROM LD ABOUT RD-IP
NO
YES
S6-2
QUERY PUBLIC DNS ABOUT RD-IP
S6-3
RD-IP RECEIVED?
NO
YES
S6-4
PROVIDE RD-IP TO LD
S6-5
DATA PACKET RECEIVED FROM LD TO RD?
NO
YES
S6
S6-6
LD-IP LD-PORT
->
HG-IP HG-PORT
S6-7
TRANSMIT PACKET TO RD-IP
S6-8
IS THERE PACKET RESPONSE?
NO
YES
S6-9
HG-IP HG-PORT
->
LD-IP LD-PORT
S6-10
TRANSMIT PACKET TO LD-IP
END

FIG.5D



P2001-0037050

FIG.6

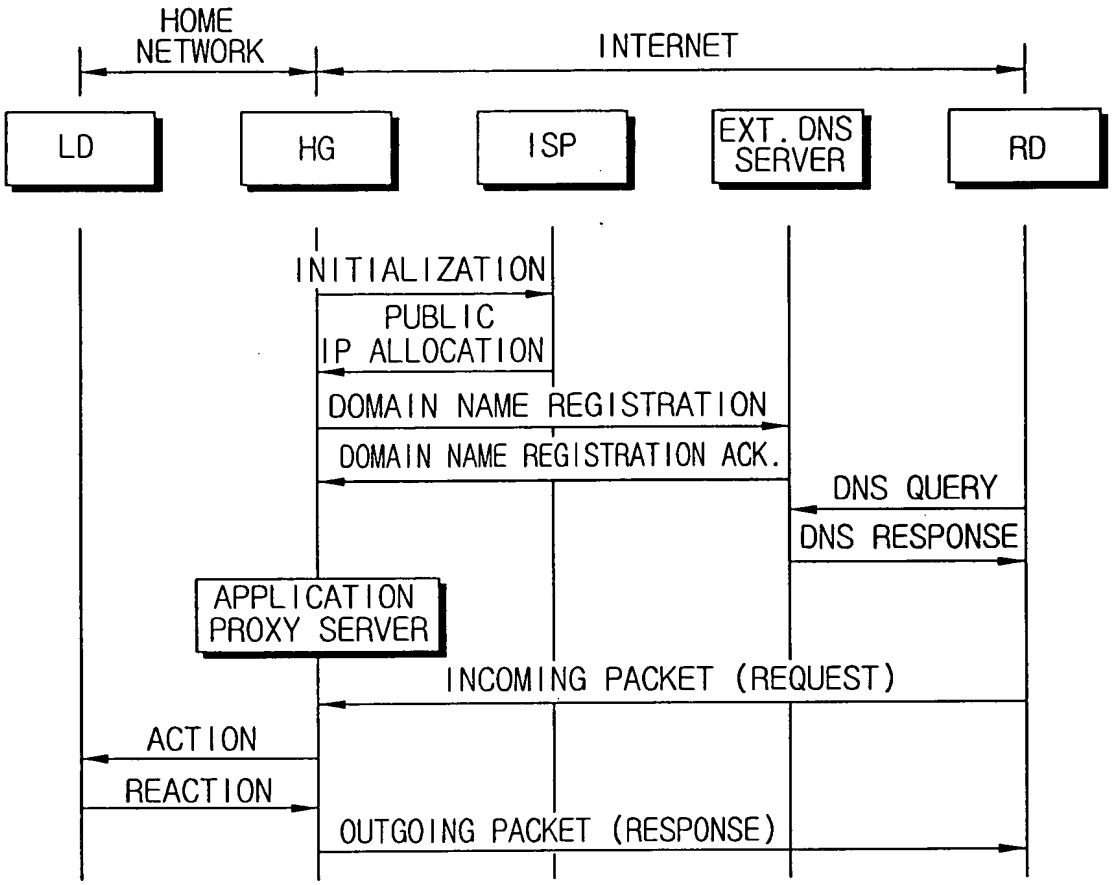

HOME NETWORK
INTERNET
LD
HG
ISP
EXT. DNS SERVER
RD
INITIALIZATION
PUBLIC IP ALLOCATION
DOMAIN NAME REGISTRATION
DOMAIN NAME REGISTRATION ACK.
DNS QUERY
DNS RESPONSE
APPLICATION PROXY SERVER
INCOMING PACKET (REQUEST)
ACTION
REACTION
OUTGOING PACKET (RESPONSE)

FIG.7

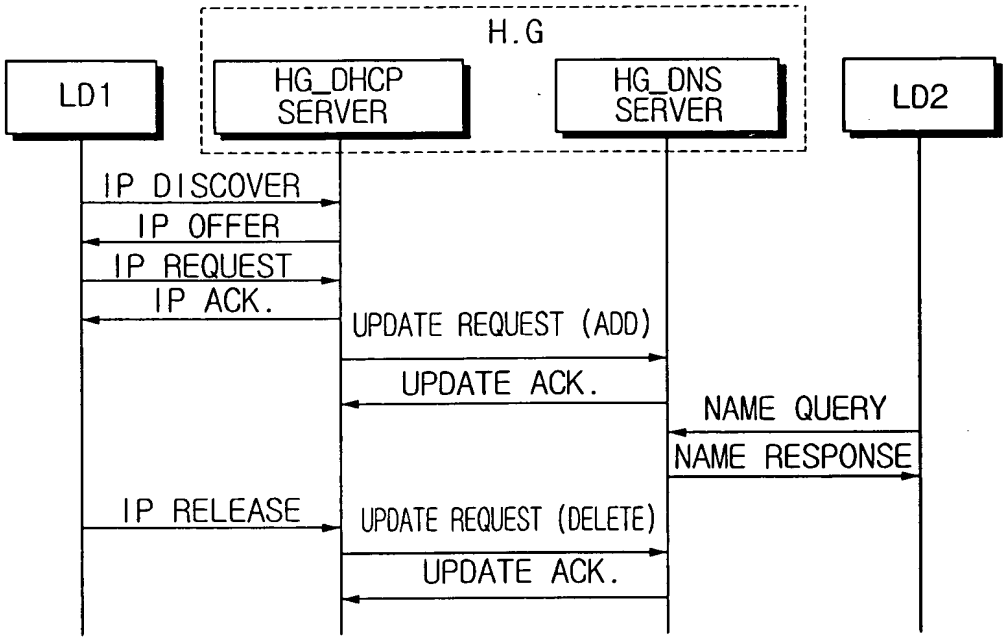

H.G
LD1
HG_DHCP SERVER
HG_DNS SERVER
LD2
IP DISCOVER
IP OFFER
IP REQUEST
IP ACK.
UPDATE REQUEST (ADD)
UPDATE ACK.
NAME QUERY
NAME RESPONSE
IP RELEASE
UPDATE REQUEST (DELETE)
UPDATE ACK.

FIG.8

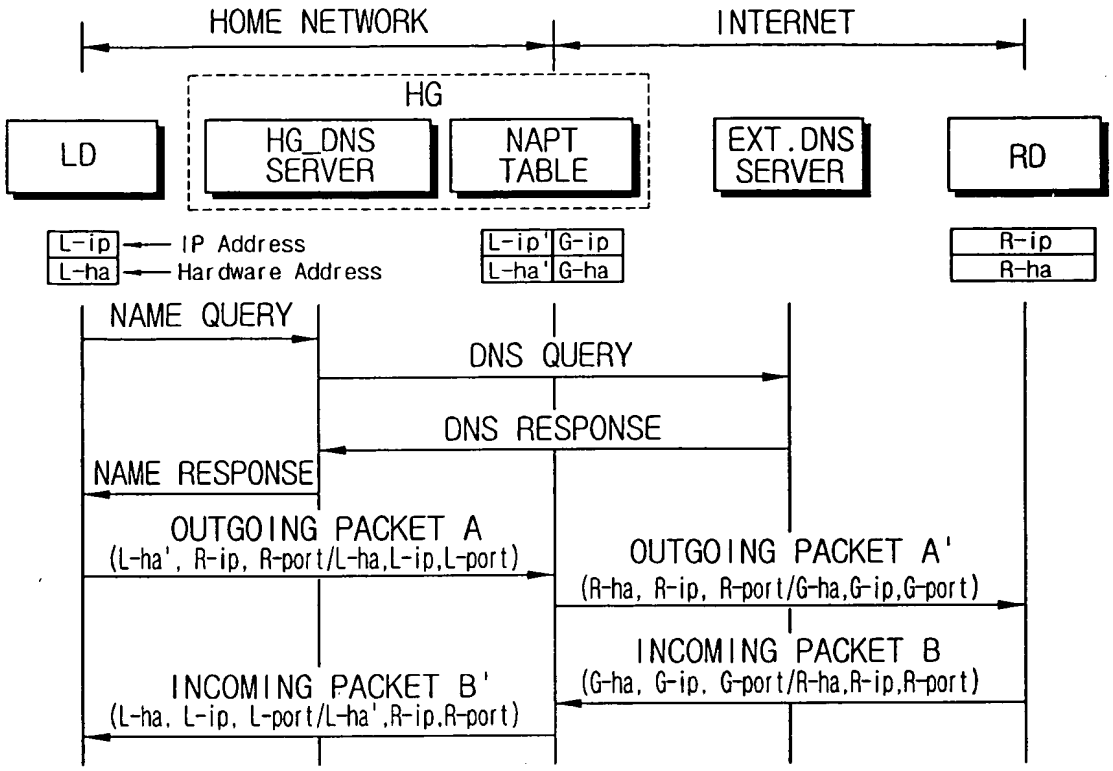


FIG.9

NAPT TABLE					
L-ip	L-port	G-ip	G-port	R-ip	R-port